

## TABLE OF CONTENTS

	<b>Page</b>
<b>Abstract .....</b>	<b>i</b>
<b>Table of Contents .....</b>	<b>ii</b>
<b>List of Figures .....</b>	<b>iv</b>
<b>List of Tables .....</b>	<b>vii</b>
<b>List of Plates .....</b>	<b>ix</b>
<b>Introduction .....</b>	<b>1</b>
Environmental Setting .....	15
Regional Prehistory .....	18
Regional History .....	21
<b>Research Methods .....</b>	28
<b>Results .....</b>	39
General Survey Results .....	39
Smyrna Study Area - Surface Survey .....	40
Leipsic Study Area - Surface Survey .....	58
Leipsic Study Area - Subsurface Testing .....	80
Dyke and Muddy Branches Study Area - Surface Survey .....	83
Hughes Crossing Study Area - Surface Survey .....	88
Hughes Crossing Study Area - Subsurface Testing .....	97
Chestnut Grove Study Area - Surface Survey .....	100
Chestnut Grove Study Area - Subsurface Testing .....	104
Little River/Pipe Elm Branch Study Area- Surface Survey .....	104
Wyoming Lake Study Area - Surface Survey .....	115
Wyoming Lake Study Area - Subsurface Testing .....	119
Derby Pond Study Area - Surface Survey .....	119
Derby Pond Study Area - Subsurface Testing .....	125
Double Run/Spring Creek Study Area - Surface Survey .....	125
Double Run/Spring Creek Study Area - Subsurface Testing .....	129
Historic Site Survey Results .....	131
<b>Analysis of Results .....</b>	172
Evaluation of Prehistoric Predictive Model .....	172
Settlement Pattern and Site Location Analysis .....	175
<b>Management Considerations .....</b>	178
Assessments of Site Significance .....	178

Cultural Resource Planning Maps .....	180
Attachment I .....	182
Attachment II .....	184
Attachment III .....	186
Future Management and Research Issues .....	181
Implications of Prehistoric Data .....	191
Implications of Historic Data .....	193
 References Cited .....	200
 Personnel .....	211
 Appendices .....	212
Appendix I: Project Proposal and Research Design...	212
Appendix II: Leitzinger and Chapman Collections ....	216
Appendix III: The Deneumoustier Collection .....	244
Appendix IV: Bailey Collection .....	247
Appendix V: Description of Prehistoric Site Attributes Recorded in General Survey .	254
Appendix VI: Representative Soil Profiles from Subsurface Testing .....	257
Appendix VII: Summary of Subsurface Testing Results .	265
Appendix VIII: Listings of Field Survey Sites by Study Area and Significance Class .....	270
Appendix IX: Listings of Historic Sites by Study Area and Significance Class .....	289
Appendix X: Data Base File Structures .....	304
Appendix XI: Notes on Site Numbers .....	310

## LIST OF FIGURES

	Page
Figure 1. Proposed Route 13 Corridor Study Area .....	2
Figure 2. Cultural Resource Management Areas - Route 13 Corridor Study Area .....	3
Figure 3. Special Cultural Resource Areas - Route 13 Corridor Study Area .....	4
Figure 4. Project Study Areas .....	5
Figure 5. Smyrna Study Area 12 .....	6
Figure 6. Leipsic Study Area 3 .....	7
Figure 7. Dyke and Muddy Branches Study Area 10 .....	8
Figure 8. Hughes Creek Study Area 6 .....	9
Figure 9. Chestnut Grove Study Area 8 .....	10
Figure 10. Little River/Pipe Elm Branch Study Area 5 .....	11
Figure 11. Wyoming Lake Study Area 9 .....	12
Figure 12. Derby Pond Study Area 7 .....	13
Figure 13. Double Run/Spring Creek Study Area 4 .....	14
Figure 14. Physiographic Zones .....	16
Figure 15. Subarea Locations - Smyrna Study Area 12 .....	30
Figure 16. Subarea Locations - Leipsic Study Area 3 .....	31
Figure 17. Subarea Locations - Dyke and Muddy Branches Study Area 10 .....	32
Figure 18. Subarea Locations - Hughes Crossing Study Area 6 .....	33
Figure 19. Subarea Locations - Chestnut Grove Study Area 8 .....	34
Figure 20. Subarea Locations - Little River/Pipe Elm Branch Study Area 5 .....	35
Figure 21. Subarea Locations - Wyoming Lake Study Area 9 .....	36
Figure 22. Subarea Locations - Derby Pond Study Area 7 ...	37

<b>Figure 23.</b>	<b>Subarea Locations - Double Run/Spring Creek</b>	
	<b>Study Area 4 .....</b>	<b>38</b>
<b>Figure 24.</b>	<b>Sites and Subareas - Smyrna Study Area 12 .....</b>	<b>41</b>
<b>Figure 25.</b>	<b>Sites and Subareas - Leipsic Study Area 3 .....</b>	<b>59</b>
<b>Figure 26.</b>	<b>Subsurface Test Locations - Leipsic Study</b>	
	<b>Area 3 .....</b>	<b>81</b>
<b>Figure 27.</b>	<b>Sites and Subareas - Dyke and Muddy Branches</b>	
	<b>Study Area 10 .....</b>	<b>84</b>
<b>Figure 28.</b>	<b>Sites and Subareas - Hughes Crossing Study</b>	
	<b>Area 6 .....</b>	<b>89</b>
<b>Figure 29.</b>	<b>Subsurface Test Locations - Hughes Crossing</b>	
	<b>Study Area 6 .....</b>	<b>98</b>
<b>Figure 30.</b>	<b>Sites and Subareas - Chestnut Grove Study</b>	
	<b>Area 8 .....</b>	<b>101</b>
<b>Figure 31.</b>	<b>Subsurface Test Locations - Chestnut Grove</b>	
	<b>Study Area 8 .....</b>	<b>105</b>
<b>Figure 32.</b>	<b>Sites and Subareas - Little River/Pipe Elm</b>	
	<b>Branch Study Area 5 .....</b>	<b>106</b>
<b>Figure 33.</b>	<b>Sites and Subareas - Wyoming Lake Study</b>	
	<b>Area 9 .....</b>	<b>116</b>
<b>Figure 34.</b>	<b>Subsurface Test Locations - Wyoming Lake</b>	
	<b>Study Area 9 .....</b>	<b>120</b>
<b>Figure 35.</b>	<b>Sites and Subareas - Derby Pond Study Area 7 ..</b>	<b>121</b>
<b>Figure 36.</b>	<b>Subsurface Test Locations - Derby Pond Study</b>	
	<b>Area 7 .....</b>	<b>124</b>
<b>Figure 37.</b>	<b>Sites and Subareas - Double Run/Spring Creek</b>	
	<b>Study Area 4 .....</b>	<b>126</b>
<b>Figure 38.</b>	<b>Subaurface Test Locations - Double Run/Spring Creek</b>	
	<b>Study Area 4 .....</b>	<b>130</b>
<b>Figure 39.</b>	<b>Standing Structures from BAHP Files - Smyrna</b>	
	<b>Study Area 12 .....</b>	<b>136</b>
<b>Figure 40.</b>	<b>Historic Archaeological Resources Data -</b>	
	<b>Smyrna Study Area 12 .....</b>	<b>137</b>
<b>Figure 41.</b>	<b>Standing Structures from BAHP Files - Leipsic</b>	
	<b>Study Area 3 .....</b>	<b>143</b>

<b>Figure 42.</b>	Historic Archaeological Resources Data - Leipsic Study Area 3 .....	144
<b>Figure 43.</b>	Standing Structures from BAHP Files - Dyke and Muddy Branches Study Area 10 .....	146
<b>Figure 44.</b>	Historic Archaeological Resources Data - Dyke and Muddy Branches Study Area 10 .....	147
<b>Figure 45.</b>	Standing Structures from BAHP Files - Hughes Crossing Study Area 6 .....	150
<b>Figure 46.</b>	Historic Archaeological Resources Data - Hughes Crossing Study Area 6 .....	151
<b>Figure 47.</b>	Standing Structures from BAHP Files - Chestnut Grove Study Area 8 .....	154
<b>Figure 48.</b>	Historic Archaeological Resources Data - Chestnut Grove Study Area 8 .....	155
<b>Figure 49.</b>	Standing Structures from BAHP Files - Little River/Pipe Elm Branch Study Area 5 .....	158
<b>Figure 50.</b>	Historic Archaeological Resources Data - Little River/Pipe Elm Branch Study Area 5 .....	159
<b>Figure 51.</b>	Standing Structures from BAHP Files - Wyoming Lake Study Area 9 .....	161
<b>Figure 52.</b>	Historic Archaeological Resources Data - Wyoming Lake Study Area 9 .....	162
<b>Figure 53.</b>	Standing Structures from BAHP Files - Derby Pond Study Area 7 .....	165
<b>Figure 54.</b>	Historic Archaeological Resources Data - Derby Pond Study Area 7 .....	166
<b>Figure 55.</b>	Standing Structures from BAHP Files - Double Run/Spring Creek Study Area 4 .....	169
<b>Figure 56.</b>	Historic Archaeological Resources Data - Double Run/Spring Creek Study Area 4 .....	170
<b>Figure 57.</b>	Box Plot: Distance to Water .....	177
<b>Figure 58.</b>	Distribution of Environments Along Coastal Plain Drainages of Different Orders .....	194

## LIST OF TABLES

	<b>Page</b>
Table 1. Special Cultural Resource Areas - Route 13 Corridor Study Area .....	4
Table 2. Locational Data - Smyrna Study Area .....	42
Table 3. Cultural - Historical Data - Smyrna Study Area .	45
Table 4. Locational Data - Leipsic Study Area .....	60
Table 5. Cultural - Historical Data - Leipsic Study Area	63
Table 6. Locational Data - Dyke and Muddy Branches Study Area .....	85
Table 7. Cultural - Historical Data - Dyke and Muddy Branches Study Area .....	87
Table 8. Locational Data - Hughes Creek Study Area .....	90
Table 9. Cultural - Historical Data - Hughes Creek Study Area .....	92
Table 10. Locational Data - Chestnut Grove Study Area ....	102
Table 11. Cultural - Historical Data - Chestnut Grove Study Area .....	103
Table 12. Locational Data - Little River/Pipe Elm Branch Study Area .....	107
Table 13. Cultural - Historical Data - Little River Study Area .....	108
Table 14. Locational Data - Wyoming Lake Study Area .....	117
Table 15. Cultural - Historical Data - Wyoming Lake Study Area .....	118
Table 16. Locational Data - Derby Pond Study Area .....	122
Table 17. Cultural - Historical Data - Derby Pond Study Area .....	123
Table 18. Locational Data - Double Run/Spring Creek Study Area .....	127
Table 19. Cultural - Historical Data - Double Run/Spring Creek Study Area .....	128

## LIST OF PLATES

	Page
Plate 1. Selected Stemmed Points from Sites in the Route 13 South Survey .....	48
Plate 2. Selected Stemmed Points from Sites in the Route 13 South Survey .....	49
Plate 3. Selected Notched Points from Sites in the Route 13 South Survey .....	50
Plate 4. Selected Broadpoints and Fishtails from Sites in Route 13 South Survey .....	51
Plate 5. Bifurcated Base Points from Sites in the Route 13 South Survey .....	52
Plate 6. Selected Prehistoric Ceramics from Sites in the Route 13 South Survey .....	56
Plate 7. Selected Ground Stone Tools from Sites in the Route 13 South Survey .....	57
Plate 8. Selected Ground Stone Tools from Sites in the Route 13 South Survey .....	67
Plate 9. Selected Bifacial Flake Tools from Sites in the Route 13 South Survey .....	68
Plate 10. Steatite Bowl Fragments from Sites in the Route 13 South Survey .....	71
Plate 11. Selected Unifacial Flake Tools from Sites in the Route 13 South Survey .....	73
Plate 12. Selected Ground Stone Tools from Sites in the Route 13 South Survey .....	75
Plate 13. Selected Bifacial Flake Tools from Sites in the Route 13 South Survey .....	77
Plate 14. Selected Triangle Points from Sites in the Route 13 South Survey .....	78
Plate 15. Selected Teardrop Shaped Bifaces from Sites in the Route 13 South Survey .....	82
Plate 16. Paleo-Indian Points from Sites in the Route 13 South Survey .....	95

Table 20.	Smyrna Study Area Historic Sites - Summary Description .....	135
Table 21.	Leipsic Study Area Historic Sites - Summary Description .....	142
Table 22.	Dyke and Muddy Branches Study Area Historic Sites - Summary Description .....	145
Table 23.	Hughes Crossing Study Area Historic Sites - Summary Description .....	149
Table 24.	Chestnut Grove Study Area Historic Sites - Summary Description .....	153
Table 25.	Little River/Pipe Elm Branch Study Area Historic Sites - Summary Description .....	157
Table 26.	Wyoming Lake Study Area Historic Sites - Summary Description .....	160
Table 27.	Derby Pond Study Area Historic Sites - Summary Description .....	164
Table 28.	Double Run/Spring Creek Study Area Historic Sites - Summary Description .....	168
Table 29.	Density Measure Data .....	174
Table 30.	Observed and Expected Site Counts for 400m Grid Cells .....	175
Table 31.	Observed and Expected Site Percentage for 400m Grid Cells .....	175
Table 32.	Geomorphological Settings of Prehistoric Sites .	176
Table 33.	Soil Setting of Prehistoric Sites .....	176
Table 34.	Aspect Settings of Prehistoric Sites .....	178
Table 35.	Typical Historic Site Locations .....	181
Table 36.	Prehistoric Site Frequencies .....	188
Table 37.	Historic Site Frequencies - pre-1802 .....	189
Table 38.	Historic Site Frequencies - 1802-1849 .....	189
Table 39.	Historic Site Frequencies 1849-1868 .....	190
Table 40.	Historic Site Frequencies 1868-1893 .....	191

Plate 17.	Selected Triangle Points from Sites in the Route 13 South Survey .....	112
Plate 18.	Selected Ground Stone Tools from Sites in the Route 13 South Survey .....	114
Plate 19.	Anvilstone from Site (7NC-J-143) in the Route 13 South Survey .....	139
Plate 20.	Standing Structure N-133 Looking East from Kent 485 .....	140
Plate 21.	Standing Structure K-2742 Looking South from Kent 371 .....	171
Plate 22.	Bailey Argillite Cache .....	253